

WHAT IS CLAIMED IS:

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5 1. A method of reading a block of data stored on an optical disc, the data block including header information, the method comprising the steps of:
synthesizing header information for the data block;
recovering actual header information from the disc; and
recovering actual user data from the disc, the user data being phase-shifted by a phase difference between the synthesized and recovered header information.

2. The method of claim 1, wherein the step of synthesizing the header information includes the steps of recovering address information from a wobble embossed on the disc; and synthesizing the header information from the recovered address information.

3. The method of claim 1, wherein the step of synthesizing the header information includes the steps of obtaining address information from the disc; and synthesizing the header information from the obtained address information.

4. The method of claim 3, wherein multiple candidates are synthesized from the address; wherein a phase difference between the actual header information and a best candidate is determined; and wherein the recovered user data is shifted according to the determined phase difference.

5. The method of claim 3, wherein the header information is synthesized by modulation encoding the address information according to a pre-specified format.

6. The method of claim 1, wherein the synthesized header information includes a sector address.

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7. The method of claim 1, wherein the synthesized header information includes a sector address and an error detection code.

8. The method of claim 1, wherein a combination of analog and digital techniques are used to phase-shift the recovered user data.

9. The method of claim 1, wherein a read clock is used to recover the data; and wherein the recovered data is phase shifted by creating a phase difference between the read clock and the recovered user data.

10. The method of claim 9, wherein the recovered data is phase shifted by time-delaying the recovered data.

11. The method of claim 9, wherein the recovered data is phase-shifted by time-delaying the read clock.

12. The method of claim 1, wherein the recovered user data is stored in memory prior to demodulation; and wherein the recovered user data is digitally phase-shifted by shifting the data stored in the memory.

13. The method of claim 1, wherein a phase difference is determined for only the first data sector of the block.

14. The method of claim 1, wherein a read clock is used to recover the block from the disc, and wherein the phase difference is faded to zero according to a time constant related to the read clock.

15. A bit-accurate read/write drive for reading a data block from a disc, the drive comprising:

means for synthesizing header information for the data block;

means for recovering actual header information from the disc; and

means for recovering actual user data from the disc, the user data being phase-shifted by a phase difference between the synthesized and actual header information.

16. Apparatus for reading a block of data block from an optical disc, the apparatus comprising:

an optical pickup unit;

an address detector;

a data recovery circuit for recovering data from an output of the optical pickup unit, the recovered data including actual header information and actual user data of the data block;

a first circuit for synthesizing header information for the data block;

a second circuit for determining a phase difference between the recovered actual and synthesized header information; and

a third circuit for phase-shifting the recovered user data by the determined phase difference.

17. The apparatus of claim 16, wherein the first circuit synthesizes the header information by recovering address information from a wobble embossed on the disc; and synthesizing the header information from the recovered address information.

18. The apparatus of claim 16, wherein address information is contained on the disc; and wherein the first circuit synthesizes the header information from the address information contained on the disc.

19. The apparatus of claim 18, wherein the second circuit generates multiple candidates from the address information and determines the phase difference as the phase difference between the recovered actual header information and a best candidate.

20. The apparatus of claim 16, wherein the third circuit includes a variable delay for phase-shifting by a fractional portion of the phase difference and memory for shifting by an integer portion of the phase difference.

21. The apparatus of claim 16, wherein the data recovery circuit includes a read clock; and wherein the recovered actual data is phase-shifted by creating a phase difference between the read clock and the recovered actual user data.

22. The apparatus of claim 21, wherein the recovered data is phase shifted by time-delaying the recovered actual user data.

23. The apparatus of claim 21, wherein the recovered data is phase-shifted by time-delaying the read clock.

24. The apparatus of claim 16, wherein the data recovery circuit includes a read clock; and wherein the second circuit determines a phase difference only for the first data sector of the block and fades the phase difference to zero according to a time constant related to the read clock.

25. The apparatus of claim 16, wherein the apparatus is a DVD drive.

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